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February 16, 2009

Ron Smith  
General Services Administration  
400 – 15<sup>th</sup> Street SW  
Auburn, WA 98001

**Subject: U.S. Customs Building – Portland, Oregon  
Limited Mold and Moisture Assessment Results  
EHSI Project 9735-01**

Dear Ron:

At your request, EHS-International, Inc. (EHSI) conducted a limited mold and moisture assessment in the basement area of the U.S. Custom House, located at 220 N.W. Eighth Avenue, Portland, Oregon. The assessment was conducted to an uncontrolled water release that affected the basement of the building in January 2009.

EHSI is pleased to provide the professional industrial hygiene services. If you have any questions concerning this report or if EHSI can provide further services to you, please call me at (425) 455-2959.

Sincerely,  
***EHS-International, Inc.***

A handwritten signature in black ink, appearing to read "Clinton Holzhauer", with a stylized flourish at the end.

Clinton Holzhauer  
Manager, Indoor Air Quality Services

- Environmental Engineering
- Earth Sciences and Mapping
- Industrial Hygiene Services
- Construction Management

# U.S. Custom House Limited Mold and Moisture Assessment



U.S. Custom House  
220 N.W. Eighth Avenue, Portland, Oregon

**Prepared for:**

Mr. Ron Smith  
**General Services Administration**  
400—15th Street SW  
Auburn, WA 98001

February 16, 2009  
EHSI Project 9735-01



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**LIMITED MOLD & MOISTURE ASSESSMENT REPORT  
U.S. CUSTOM HOUSE - BASEMENT  
PORTLAND, OREGON**

**EXECUTIVE SUMMARY**

On February 11<sup>th</sup>, 2009, EHS-International, Inc. (EHSI), a health and safety consulting firm, conducted a limited mold and moisture assessment in the basement of the U.S. Custom House located at 220 N.W. Eighth Avenue, Portland, Oregon. It was reported to EHSI that an exterior wall hose bib froze and broke on approximately January 8<sup>th</sup>. It was further reported that because the building currently has no occupants the water release may not been noted for several days. EHSI conducted a brief, pre-proposal walk-through of the site on January 20<sup>th</sup> and reported to the GSA that many walls had elevated moisture contents at the time of the walk-through.

It was reported that ServiceMaster, a fire and water restoration firm, positioned air blowers and dehumidifiers in the basement shortly before January 20<sup>th</sup>. After EHSI's pre-proposal walk-through on January 20<sup>th</sup> but prior to the assessment on February 11<sup>th</sup>, many water-affected gypsum wallboard (GWB) walls were removed to a height that varied from two to four feet (Photo #1). While no suspect mold growth was observed on in-situ building materials during the assessment, EHSI noted several water-related conditions that should be addressed.

GWB in the south corridor, between the point of origin of the water-release and the start of the apparent contained area established by ServiceMaster, had not been removed but still had elevated moisture contents. Room B07, accessible through the south corridor had some GWB walls with elevated moisture contents as well as a partial elevated floor system and a "musty" odor.

A smaller area of still moist GWB was also identified in the basement room in the NE corner of the building.

In addition, approximately two-inches of standing water was observed in the bottom of a lift shaft. While the source of the water is unknown it may be related to the uncontrolled water release and should be addressed. The condition of the bottom of the other two elevator pits in the building could not be determined. EHSI recommends that an elevator service group assist in the examination of the bottoms of the other elevator pits. Standing water should be removed if encountered.

## **BACKGROUND**

It was reported to EHSI that an exterior wall hose bib froze and broke on approximately January 8<sup>th</sup>, 2009, in the basement of the U.S. Custom House located at 220 N.W. Eighth Avenue, Portland, Oregon. It was further reported that because the building is essentially empty, the water release may not been noted for several days. The water reportedly flowed into the basement through an outdoor air intake vent in the mechanical room located in the southwest corner of the basement. The air handling equipment reportedly had 3-inches of standing water when the release was first identified by building personnel.

During a pre-proposal walk-through on January 20<sup>th</sup>, EHSI noted air movers and de-humidifiers that had reportedly been placed by ServiceMaster, a fire and water remediation firm. In addition, the cove base strip had been removed from many water-affected walls and approximately 1-inch diameter holes had been drilled or punched in the lower GWB walls at 1-foot intervals, to facilitate drying of the wall cavities. After the pre-proposal walk-through EHSI expressed concerns to the GSA that based on the conditions observed the drying of building materials would likely be slow and some mold growth development was possible. This was based on the observation that some walls had two layers of GWB, there were many affected rooms, and some of the rooms had contents that could impede air flow.

## **SITE DESCRIPTION**

The U.S. Custom House, completed in 1901, is a four story brick and concrete masonry unit (CMU) structure located at 220 N.W. Eighth Avenue, Portland, Oregon. The building is currently vacant.

The uncontrolled water-release caused water to enter the below-grade basement of the building. The water release began in the southwest corner of the building and appeared to travel into the building along the south corridor. In the southeast corner of the building the water apparently followed the east hallway towards the north. Water damage was noted in the northeast corner of the building.

Most floors were concrete or concrete covered with 1-foot square floor tiles. In some areas carpet tiles overlay the flooring. Walls were GWB, concrete or concrete masonry units. Some walls had textile or paper wall coverings. In a few locations (such as the kitchen) it was noted that the wall-cavity side of the room GWB was foil-lined, not paper-lined.

It should be noted that efflorescence and other evidence of water damage to concrete and CMUs, which were not related to the subject water release event, were observed in many basement locations, particularly exterior walls. This assessment report only addresses water damage believed to have been a result of the subject water release.

## **APPROACH**

EHSI's assessment on February 11<sup>th</sup>, 2009 included a visual inspection in the areas of concern for evidence of potential mold growth and continued elevated moisture contents in building materials. A TSI Q-Trak was used to determine the temperature and relative humidity of the space at the time of the assessment. No air samples were collected as part of this assessment. No tape lift or bulk samples were collected as no suspect growth was observed on building materials. In many cases the assessment was conducted by flashlight due to inoperable light switches.

Penetrating and non-penetrating moisture meters were used to determine the moisture content of building materials that were affected during the water release event. The non-penetrating meter used was a Drieaz, Products, Inc. Moisture Counter. The penetrating moisture meter used was a Drieaz Moisture PRO.

## **SURVEY RESULTS**

Floor Plans, presented as Appendices A and B, provide information regarding the location and the height of GWB removal by ServiceMaster. They also provide the locations of the two areas in which GWB with elevated moisture contents remained at the time of the assessment. Some of the rooms affected by water can not be easily identified in a narrative form because not all rooms had signs with designated room numbers.

Containment walls previously erected in hallways by ServiceMaster during dry-out and GWB removal activities were apparent but not in-place during this assessment. Only the areas of concern will be discussed below. All other areas were considered relatively clean and dry.

### ***Lift Pit –***

A lift pit (not one of the two elevator pits) on the east side of the basement, adjacent to Room B27, had approximately 2-inches of standing water that may have entered the pit during the water release event (Photo #2).

### ***Elevator Pits –***

The building has two elevators. The condition of the elevator pits could not be determined during the assessment. Neither elevator appears to have been in an area affected by moisture. The top of one elevator cab has a semi-transparent plexi-sheet with apparent water stains. The water stains are not likely due to the water release for which this assessment was conducted.

### ***GWB with Elevated Moisture Content –***

Some GWB on the south side of the south hallway had elevated moisture content. GWB was removed from the south side of the south hallway but only to the containment wall established by ServiceMaster. GWB with elevated moisture content was present from the containment at mid-corridor (outside B11) to B05, the end of the hallway at the mechanical room point of origin. The GWB on the room side of this wall also had elevated moisture content.

### ***Room B07 -***

Room B07 is included in the “GWB with Elevated Moisture Content” area described above but it is being discussed separately because it is the only area in the basement in which a distinct “musty” odor was noted. The source of the musty odor is unknown. It may be associated with the moist GWB described above or it may be related to the raised floor system in part of the room (Photo #3). An access hole (Photo #4) was enlarged to enable a visual assessment of the space beneath the raised floor, but only a limited area could be observed from the small hole. The raised floor panels had carpet tiles overlaying them and none of the panels could be removed for direct visual observation of the space beneath the floor.

### ***B27 –***

The bump-out in the southwest corner of Room B27 continued to have GWB with elevated moisture content to a height of approximately 4-feet. The wall cavity was open from the hall side.

### ***Hallway Floor Vault –***

There were two (2) approximately 2 x 3 x 1.5-foot vaults beneath the south hallway (Photos #7 and 8). A half-inch thick iron plate was removed from one the vaults to expose a concrete-lined vault with an approximately 5-inch diameter capped drain pipe at the bottom. The debris in the vault was slightly damp but not wet and no suspect growth was observed. There was corrosion present from the steel plate.

### ***NE Corner Room -***

The room in the NE corner of the basement had a small area of GWB with elevated moisture content on the south side of the room.

### ***The Mechanical Room –***

The mechanical room in the southwest corner of the basement was the reported source of water release. Water reportedly entered the building through an outdoor air intake vent (Photo #9). At the time of the assessment there was no observed or suspected mold growth and no materials had elevated moisture contents. On the other hand, some insulation/sound damping lining used in the



mechanical space had visual evidence of a "high water line", and all the lining appeared to be somewhat particulate laden from years of service (Photo #10).

### ***Room B18 –***

Flooring had apparently been removed from Room B18 (Photo #5). The flooring that remains was 12-inch square floor tiles on concrete. Many tiles, particularly those by the door were cupped. It is uncertain whether this condition was caused by the water release.

### ***Moisture***

At 3:30 pm on February 11<sup>th</sup>, the temperature and relative humidity in the basement Room B27 was 55°F and 43%, respectively.

Building materials with elevated moisture content are discussed above and identified on Floor Plans in Appendix A.

### ***Mold Growth***

No suspect mold growth was observed on in-situ building materials in the Custom House. The basement did have a lot of stored items and while an assessment of the contents was not part of this project's scope, some mold growth was observed on several of these stored items during the assessment. It is uncertain whether the growth was due to the water-release event. One area with some mold growth on items was in Room B29 in which mold growth was observed on at least one cellulosic ceiling tile stored on the floor (Photo #6).

Some mold growth is suspected in Room B11 due to a musty odor within the room.

## **CONCLUSIONS & RECOMMENDATIONS**

Based on the visual and moisture meter assessment EHSI believes that mitigation activities are almost, but not quite completed in the Custom House.

EHSI recommends the following actions:

- The identified GWB walls with elevated moisture content should be dried in an accelerated fashion by removing lower GWB. The bump-out in Room B27 may only require air movement as the wall cavity is open from the hall side.
- If no suspect mold growth is identified in the wall cavity of Room B11 the raised floor system should be partially disassembled to allow a visual assessment of the underlying space. Any suspect growth should be removed by disposal of affected materials and/or cleaning.

- Standing water should be pumped out of the lift pit near Room B27. The pits of the other two elevators should be checked for standing water, if it has not already been done.
- While all materials in the mechanical room were dry at the time of the assessment, the condition of lining material suggested that it may be near the end of its serviceable life.

## **LIMITATIONS AND STANDARD OF CARE**

This mold and moisture assessment was conducted by EHSI in accordance with Proposal 09-011 as authorized in an e-mail received February 9, 2009. This project is conducted as part of GSA CL1239263. Although visual observations were made in the areas of concern, extensive destructive testing to examine all hidden areas was not part of our scope. During the course of additional assessments or remedial work additional water damaged and/or mold contaminated materials may be found.

EHSI followed currently accepted industrial hygiene practices, including professional opinions based on observations and laboratory data obtained. The recommendations are derived in part from the "Guidelines on Assessment and Remediation of Fungi in Indoor Environments" and "Bioaerosols: Assessment and Control", American Conference of Governmental Industrial Hygienists (ACGIH), published in 1999. These guidelines are generally accepted as "industry standard" for mold remediation protocols. Other than this, **no warranty is implied or intended.**